Practitioner's Docket No. 460-008652-US(PAR) **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of

Inventor(s): Matti TURUNEN

WARNING: *37 C.F.R. § 1.41(a)(1) points out:*

"(a) A patent is applied for in the name or names of the actual inventor or inventors.

"(1) The inventorship of a nonprovisional application is that inventorship set forth in the oath or declaration as prescribed by § 1.63, except as provided for in § 1.53(d)(4) and § 1.63(d). If an oath or declaration as prescribed by § 1.63 is not filed during the pendency of a nonprovisional application, the inventorship is that inventorship set forth in the application papers filed pursuant to § 1.53(b), unless a petition under this paragraph accompanied by the fee set forth in § 1.17(i) is filed supplying or changing the name or names of the inventor or inventors."

For (title):

A METHOD FOR TRANSMITTING MULTIMEDIA MESSAGES AND A MULTIMEDIA MESSAGE COMMUNICATION SYSTEM

CERTIFICATION UNDER 37 C.F.R. 1.10*
(Express Mail label number is mandatory.)
(Express Mail certification is optional.)

I hereby certify that this New Application Transmittal and the documents referred to as attached therein are being deposited with the United States Postal Service on this date May 25, 1999 in an envelope as "Express Mail Post Office to Addressee," mailing Label Number EL336226049US addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Elaine Mian
(type or print name of person mailing paper)

Elaine Mian
Signature of person mailing paper

WARNING: *Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.*

****WARNING:*** *Each paper or fee filed by "Express Mail"* ***must*** *have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. 1.10(b).*
"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will ***not*** *be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.*

1. Type of Application

This new application is for a(n)

(check one applicable item below)

☒ Original (nonprovisional)

☐ Design

☐ Plant

WARNING: *Do not use this transmittal for a completion in the U.S. of an International Application under 35 U.S.C. 371(c)(4), unless the International Application is being filed as a divisional, continuation or continuation-in-part application.*

WARNING: *Do not use this transmittal for the filing of a provisional application.*

NOTE: If one of the following 3 items apply, then complete and attach ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF A PRIOR U.S. APPLICATION CLAIMED and a NOTIFICATION IN PARENT APPLICATION OF THE FILING OF THIS CONTINUATION APPLICATION.

☐ Divisional.

☐ Continuation.

☐ Continuation-in-part (C-I-P).

2. Benefit of Prior U.S. Application(s) (35 U.S.C. 119(e), 120, or 121)

NOTE: A nonprovisional application may claim an invention disclosed in one or more prior filed copending nonprovisional applications or copending international applications designating the United States of America. In order for a nonprovisional application to claim the benefit of a prior filed copending nonprovisional application or copending international application designating the United States of America, each prior application must name as an inventor at least one inventor named in the later filed nonprovisional application and disclose the named inventor's invention claimed in at least one claim of the later filed nonprovisional application in the manner provided by the first paragraph of 35 U.S.C. 112. Each prior application must also be:

(i) An international application entitled to a filing date in accordance with PCT Article 11 and designating the United States of America; or

(ii) Complete as set forth in § 1.51(b); or

(iii) Entitled to a filing date as set forth in § 1.53(b) or § 1.53(d) and include the basic filing fee set forth in § 1.16; or

(iv) Entitled to a filing date as set forth in § 1.53(b) and have paid therein the processing and retention fee set forth in § 1.21(l) within the time period set forth in § 1.53(f).

37 C.F.R. § 1.78(a)(1).

NOTE: If the new application being transmitted is a divisional, continuation or a continuation-in-part of a parent case, or where the parent case is an International Application which designated the U.S., or benefit of a prior provisional application is claimed, then check the following item and complete and attach ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

WARNING: *If an application claims the benefit of the filing date of an earlier filed application under 35 U.S.C. 120, 121 or 365(c), the 20-year term of that application will be based upon the filing date of the earliest U.S. application that the application makes reference to under 35 U.S.C. 120, 121 or 365(c). (35 U.S.C. 154(a)(2) does not take into account, for the determination of the patent term, any application on which priority is claimed under 35 U.S.C. 119, 365(a) or 365(b).) For a c-i-p application, applicant should review whether any claim in the patent that will issue is supported by an earlier application and, if not, the applicant should consider canceling the reference to the earlier filed application. The term of a patent is not based on a claim-by-claim approach. See Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,205.*

WARNING: When the last day of pendency of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, any nonprovisional application claiming benefit of the provisional application must be filed prior to the Saturday, Sunday, or Federal holiday within the District of Columbia. See 37 C.F.R. § 1.78(a)(3).

☐ The new application being transmitted claims the benefit of prior U.S. application(s). Enclosed are ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

3. Papers Enclosed

A. Required for filing date under 37 C.F.R. § 1.53(b) (Regular) or 37 C.F.R. § 1.153 (Design) Application

18 Pages of specification

3 Pages of claims

6 Sheets of drawing

WARNING: DO NOT submit original drawings. A high quality copy of the drawings should be supplied when filing a patent application. The drawings that are submitted to the Office must be on strong, white, smooth, and non-shiny paper and meet the standards according to § 1.84. If corrections to the drawings are necessary, they should be made to the original drawing and a high-quality copy of the corrected original drawing then submitted to the Office. Only one copy is required or desired. For comments on proposed then-new 37 CFR 1.84, see Notice of March 9, 1988 (1990 O.G. 57-62).

NOTE: "Identifying indicia, if provided, should include the application number or the title of the invention, inventor's name, docket number (if any), and the name and telephone number of a person to call if the Office is unable to match the drawings to the proper application. This information should be placed on the back of each sheet of drawing a minimum distance of 1.5 cm. (5/8 inch) down from the top of the page . . ." 37 C.F.R. 1.84(c)).

(complete the following, if applicable)

☐ The enclosed drawing(s) are photograph(s), and there is also attached a "PETITION TO ACCEPT PHOTOGRAPH(S) AS DRAWING(S)." 37 C.F.R. 1.84(b).

☐ formal

☐ informal

B. Other Papers Enclosed

6 Pages of declaration and power of attorney

1 Pages of abstract

____ Other

4. Additional papers enclosed

☐ Amendment to claims

☐ Cancel in this applications claims _____ before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)

☐ Add the claims shown on the attached amendment. (Claims added have been numbered consecutively following the highest numbered original claims.)

☒ Preliminary Amendment

☒ Information Disclosure Statement (37 C.F.R. 1.98)

☒ Form PTO–1449 (PTO/SB/08A and 08B)

☒ Citations

☐ Declaration of Biological Deposit

☐ Submission of "Sequence Listing," computer readable copy and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence.

☐ Authorization of Attorney(s) to Accept and Follow Instructions from Representative

☐ Special Comments

☐ Other

5. Declaration or oath (including power of attorney)

NOTE: A newly executed declaration is not required in a continuation or divisional application provided that the prior nonprovisional application contained a declaration as required, the application being filed is by all or fewer than all the inventors named in the prior application, there is no new matter in the application being filed, and a copy of the executed declaration filed in the prior application (showing the signature or an indication thereon that it was signed) is submitted. The copy must be accompanied by a statement requesting deletion of the names of person(s) who are not inventors of the application being filed. If the declaration in the prior application was filed under § 1.47, then a copy of that declaration must be filed accompanied by a copy of the decision granting § 1.47 status or, if a nonsigning person under § 1.47 has subsequently joined in a prior application, then a copy of the subsequently executed declaration must be filed. See 37 C.F.R. §§ 1.63(d)(1)–(3).

NOTE: A declaration filed to complete an application must be executed, identify the specification to which it is directed, identify each inventor by full name including family name and at least one given name, without abbreviation together with any other given name or initial, and the residence, post office address and country or citizenship of each inventor, and state whether the inventor is a sole or joint inventor. 37 C.F.R. § 1.63(a)(1)–(4).

☒ Enclosed

Executed by

(check **all** *applicable boxes)*

☒ inventor(s).

☐ legal representative of inventor(s). 37 CFR 1.42 or 1.43.

☐ joint inventor or person showing a proprietary interest on behalf of inventor who refused to sign or cannot be reached.

☐ This is the petition required by 37 CFR 1.47 and the statement required by 37 CFR 1.47 is also attached. See item 13 below for fee.

☐ Not Enclosed.

NOTE: Where the filing is a completion in the U.S. of an International Application or where the completion of the U.S. application contains subject matter in addition to the International Application, the application may be treated as a continuation or continuation-in-part, as the case may be, utilizing ADDED PAGE FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION CLAIMED.

☐ Application is made by a person authorized under 37 C.F.R. 1.41(c) on behalf of *all* the above named inventor(s).

(The declaration or oath, along with the surcharge required by 37 CFR 1.16(e) can be filed subsequently).

☐ Showing that the filing is authorized. *(not required unless called into question. 37 CFR 1.41(d))*

6. Inventorship Statement

WARNING: If the named inventors are each not the inventors of all the claims an explanation, including the ownership of the various claims at the time the last claimed invention was made, should be submitted.

The inventorship for all the claims in this application are:

☐ The same.

or

☐ Not the same. An explanation, including the ownership of the various claims at the time the last claimed invention was made,

☐ is submitted.

☐ will be submitted.

7. Language

NOTE: An application including a signed oath or declaration may be filed in a language other than English. An English translation of the non-English language application and the processing fee of $130.00 required by 37 CFR 1.17(k) is required to be filed with the application, or within such time as may be set by the Office. 37 CFR 1.52(d).

☒ English

☐ Non-English

☐ The attached translation includes a statement that the translation is accurate. 37 C.F.R. 1.52(d).

8. Assignment

☒ An assignment of the invention to Nokia Mobile Phones Limited

☒ is attached. A separate ☒ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.

☐ will follow.

NOTE: "If an assignment is submitted with a new application, send two separate letters-one for the application and one for the assignment." Notice of May 4, 1990 (1114 O.G. 77-78).

WARNING: A newly executed "CERTIFICATE UNDER 37 CFR 3.73(b)" must be filed when a continuation-in-part application is filed by an assignee. Notice of April 30, 1993, 1150 O.G. 62-64.

9. Certified Copy

Certified copy(ies) of application(s)

Country	Appln. No.	Filed
Finland	981184	27 May 1998
Country	Appln. No.	Filed
Country	Appln. No.	Filed

from which priority is claimed

☒ is (are) attached.

☐ will follow.

NOTE: The foreign application forming the basis for the claim for priority must be referred to in the oath or declaration. 37 CFR 1.55(a) and 1.63.

NOTE: This item is for any foreign priority for which the application being filed directly relates. If any parent U.S. application or International Application from which this application claims benefit under 35 U.S.C. 120 is itself entitled to priority from a prior foreign application, then complete item 18 on the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

10. Fee Calculation (37 C.F.R. 1.16)

A. ☒ Regular application

CLAIMS AS FILED				
Number filed	Number Extra		Rate	Basic Fee 37 C.F.R. 1.16(a) $760.00
Total Claims (37 CFR 1.16(c)) 13 – 20 =	0	×	$ 18.00	
Independent Claims (37 CFR 1.16(b)) 3 – 3 =	0	×	$ 78.00	
Multiple dependent claim(s), if any (37 CFR 1.16(d))		+	$ 260.00	

☐ Amendment cancelling extra claims is enclosed.

☒ Amendment deleting multiple-dependencies is enclosed.

☐ Fee for extra claims is not being paid at this time.

NOTE: If the fees for extra claims are not paid on filing they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Patent and Trademark Office in any notice of fee deficiency. 37 CFR 1.16(d).

Filing Fee Calculation $ 760.00

B. ☐ Design application
($ 310.00—37 CFR 1.16(f))

Filing Fee Calculation $_____

C. ☐ Plant application
($ 480.00—37 CFR 1.16(g))

Filing fee calculation $_____

11. Small Entity Statement(s)

☐ Statement(s) that this is a filing by a small entity under 37 CFR 1.9 and 1.27 is (are) attached.

WARNING: "Status as a small entity must be specifically established in each application or patent in which the status is available and desired. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established. The refiling of an application under § 1.53 as a continuation, division, or continuation-in-part (including a continued prosecution application under § 1.53(d)), or the filing of a reissue application requires a new determination as to continued entitlement to small entity status for the continuing or reissue application. A nonprovisional application claiming benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) of a prior application, or a reissue application may rely on a statement filed in the prior application or in the patent if the nonprovisional application or the reissue application includes a reference to the statement in the prior application or in the patent or includes a copy of the statement in the prior application or in the patent and status as a small entity is still proper and desired. The payment of the small entity basic statutory filing fee will be treated as such a reference for purposes of this section." 37 C.F.R. § 1.28(a)(2).

(complete the following, if applicable)

☐ Status as a small entity was claimed in prior application

_____ / _____, filed on _____, from which benefit is being claimed for this application under:

35 U.S.C. ☐ 119(e),
☐ 120,
☐ 121,
☐ 365(c),

- and which status as a small entity is still proper and desired.

☐ A copy of the statement in the prior application is included.

Filing Fee Calculation (50% of A, B or C above)

$_____

NOTE: Any excess of the full fee paid will be refunded if small entity status is established and a refund request are filed within 2 months of the date of timely payment of a full fee. The two-month period is not extendable under § 1.136. 37 CFR 1.28(a).

12. Request for International-Type Search (37 C.F.R. 1.104(d))

(complete, if applicable)

☐ Please prepare an international-type search report for this application at the time when national examination on the merits takes place.

13. Fee Payment Being Made at This Time

☐ Not Enclosed

☐ No filing fee is to be paid at this time.
(This and the surcharge required by 37 C.F.R. 1.16(e) can be paid subsequently.)

☒ Enclosed

☒ Filing fee	$ 760.00
☒ Recording assignment ($40.00; 37 C.F.R. 1.21(h)) (See attached "COVER SHEET FOR ASSIGNMENT ACCOMPANYING NEW APPLICATION".)	$ 40.00
☐ Petition fee for filing by other than all the inventors or person on behalf of the inventor where inventor refused to sign or cannot be reached ($130.00; 37 C.F.R. 1.47 and 1.17(i))	$ _____
☐ For processing an application with a specification in a non-English language ($130.00; 37 C.F.R. 1.52(d) and 1.17(k))	$ _____
☐ Processing and retention fee ($130.00; 37 C.F.R. 1.53(d) and 1.21(l))	$ _____
☐ Fee for international-type search report ($40.00; 37 C.F.R. 1.21(e))	$ _____

NOTE: 37 CFR 1.21(l) establishes a fee for processing and retaining any application that is abandoned for failing to complete the application pursuant to 37 CFR 1.53(f) and this, as well as the changes to 37 CFR 1.53 and 1.78(a)(1), indicate that in order to obtain the benefit of a prior U.S. application, either the basic filing fee must be paid, or the processing and retention fee of § 1.21(l) must be paid, within 1 year from notification under § 53(f).

Total fees enclosed $ 800.00

14. Method of Payment of Fees

☒ Check in the amount of $ 800.00

☐ Charge Account No. _____ in the amount of $_____

A duplicate of this transmittal is attached.

NOTE: Fees should be itemized in such a manner that it is clear for which purpose the fees are paid. 37 CFR 1.22(b).

15. Authorization to Charge Additional Fees

WARNING: If no fees are to be paid on filing, the following items should not be completed.

WARNING: Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges, if extra claim charges are authorized.

☒ The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 16-1350.

☒ 37 C.F.R. 1.16(a), (f) or (g) (filing fees)

☒ 37 C.F.R. 1.16(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 CFR 1.16(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

☒ 37 C.F.R. 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)

☒ 37 C.F.R. §§ 1.17(a)(1)–(5) (extension fees pursuant to § 1.136(a)).

☐ 37 C.F.R. 1.17 (application processing fees)

NOTE: ". . . A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).

☐ 37 C.F.R. 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 CFR 1.311(b).

NOTE: 37 CFR 1.28(b) requires "Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying, . . . the issue fee. . . ." From the wording of 37 CFR 1.28(b), (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

16. Instructions as to Overpayment

NOTE: ". . . Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

☒ Credit Account No. 16-1350

☐ Refund

SIGNATURE OF PRACTITIONER

Clarence A. Green

(type or print name of attorney)

PERMAN & GREEN, LLP

P.O. Address

425 Post Road
Fairfield, CT 06430

Reg. No. 24,622

Tel. No. (203) 259-1800

Customer No.

☐ **Incorporation by reference of added pages**

(check the following item if the application in this transmittal claims the benefit of prior U.S. application(s) (including an international application entering the U.S. stage as a continuation, divisional or C-I-P application) and complete and attach the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED)

☐ Plus Added Pages for New Application Transmittal Where Benefit of Prior U.S. Application(s) Claimed

Number of pages added _____

☐ Plus Added Pages for Papers Referred to in Item 4 Above

Number of pages added _____

☐ Plus added pages deleting names of inventor(s) named in prior application(s) who is/are no longer inventor(s) of the subject matter claimed in this application.

Number of pages added _____

☐ Plus "Assignment Cover Letter Accompanying New Application"

Number of pages added _____

☒ **Statement Where No Further Pages Added**

(if no further pages form a part of this Transmittal, then end this Transmittal with this page and check the following item)

☒ This transmittal ends with this page.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Express Mail No.: EL336226049US

In re Application of: Matti TURUNEN

SERIAL NUMBER: EXAMINER:

FILING DATE: Herewith ART UNIT:

TITLE: A METHOD FOR TRANSMITTING MULTIMEDIA MESSAGES AND A MULTIMEDIA MESSAGE COMMUNICATION SYSTEM

ATTORNEY DOCKET NO.: 460-008652-US(PAR)

The Commissioner of Patents and Trademarks

Washington, D.C. 20231

PRELIMINARY AMENDMENT

Dear Sir:

Please amend the above-identified, enclosed patent application as follows:

IN THE CLAIMS:

Please amend Claims 3, 4, 6, 7, 11 and 13 as shown below.

Claim 3, line 1, delete " or 2".

Claim 4, line 1, delete "2, or 3,"

Claim 6, line 1, delete "or 5".

Claim 7, line 1, delete "any of the claims 1 to 6" and insert --claim 1--.

Claim 11, line 1, delete "or 10"

Claim 13, line 2, delete "any of the claims 8 to 11" and insert --claim 8--.

REMARKS

Please enter this preliminary amendment prior to calculation of the fees.

Respectfully submitted,

[signature] 25 May 99

Clarence A. Green, Reg. No. 24,622
PERMAN & GREEN, LLP
425 Post Road
Fairfield, CT 06430
(203) 259-1800

Date

A method for transmitting multimedia messages and a multimedia message communication system

The present invention relates to a method according to the preamble of the appended claim 1 for transmitting multimedia messages. The invention also relates to a multimedia message communication system according to the preamble of the appended claim 8, a multimedia message server according to the preamble of the appended claim 12, and a multimedia terminal according to the preamble of the appended claim 13.

In e-mail systems, it is possible to transmit messages between terminals. E-mail systems have been primarily only used the transmission of fairly short messages in text form from a source terminal to a destination terminal, but with the increase in multimedia applications, a need has arisen to transmit also other messages than those in text form. In this specification, such multimedia messages refer to the transmission of images, audio, video, files and other binary data in a so-called store-and-forward fashion. This store-and-forward fashion means that when the recipient is coupled to an e-mail network, the message is transmitted to the recipient immediately, and when the recipient is not coupled to the e-mail network the message is stored in an e-mail server. In this latter case, the aim is to transmit the message to the recipient later when the s/he is coupled to the e-mail network.

The quantity of information contained in multimedia messages can vary widely, for instance according to the type of information in question. For example in the case of so-called still images, the typical quantity of data is in the order of 50 kilobytes to a few hundred kilobytes. However, in audio and video messages, the quantity of information can be considerably larger than this. In this specification the term "multimedia terminal" will be used for such a terminal with which this kind of multimedia information can be processed.

In order to make mobility possible, the terminal can be provided in connection with a wireless communication device, wherein the terminal can be in a data transmission connection via a mobile communication network for example to the Internet data network. This can be

implemented, for example, by using a packet format data transmission system GPRS (General Packet Radio Service) developed for the GSM mobile communication system. The term "packet radio system" is also used for such wireless packet switched system utilizing radio data transmission.

Several principles are known in the transmission of e-mail messages. A message can be composed for example in such a way that at the transmission stage, the e-mail message is supplemented with annexed files containing the actual multimedia information. When transmitting the message, it is typically divided into packets according to a packet data protocol, for example into packets according to the Internet protocol (IP), which are transmitted in the e-mail network to the recipient defined in the message. One such data network suitable for transmission of e-mail messages is the Internet data network. The Internet data network is composed of networks arranged in a hierarchy, for example local area networks (LAN), regional telecommunication networks and international telecommunication networks. These data transmission networks are connected internally and externally with routers, which transmit information from the source terminal or from the preceding router in the data transmission chain and route the data to the destination terminal, or to the router located next in the data transmission chain. The Internet data network is also used for transmission of information other than e-mail messages.

Due to the fact that open data systems have become increasingly common, the TCP/IP (Transmission Control Protocol/Internet Protocol) connection protocol has developed into a widely used protocol, by means of which computers of different sizes and makes can communicate with each other. TCP/IP support is currently available for nearly all operating systems. The network layer protocol IP, Internet Protocol, of the TCP/IP is intended to be routed by gateways, i.e. routers. Routing is conducted by means of IP addresses and routing tables.

An Internet terminal connected to the Internet data network has a specified Internet address, which can either be static or dynamic, wherein when dynamic, it is produced for example with a dynamic host

configuration protocol (DHCP) in that local area network server to which the terminal is being connected

.

The IP defines the data transmission in packets, which makes a burst transmission possible. Thereby the same data transmission channel can be used in several connections simultaneously by sending the packets of different connections in different time slots.

In packet transmission according to the Internet protocol, it is possible to transmit the packets directly to the recipient only when the network parts of the addresses of both the sender and the recipient are the same. Otherwise, the packets are transmitted to a router, which is responsible for transmitting packets further, either to a next router or to the recipient, if the recipient is in the network of the router. In each router, the header field of the packets entering the router is examined, and on the basis of the address information contained in it, it is determined where the packet is to be transmitted. Packets transmitted via the same route form a so-called data transmission stream. Since the Internet protocol is characteristically a connectionless protocol, the above presented procedures have to be conducted for each packet entering the router.

E-mail systems typically comprise one or more e-mail servers for the purpose of e.g. routing the departing e-mails forward, and receiving and storing such e-mails which are addressed to a recipient logged in the e-mail server in question. This kind of an e-mail server can be, for example, a server located in the internal local area network of a company and having also e-mail server functions. It is, however, possible that the e-mail server is a separate server in the local area network, but this not significant with respect to applying the present invention.

Each user utilizing the e-mail system is allocated an individual e-mail address. The manner of representing this address can vary in different e-mail systems. For example in the Internet data network, a common representation of the address is the following: "firstname.lastname@ organization.firm.country". In the address, the part following the symbol

@ defines the domain and the first part of the address defines the recipient in that domain.

Some GSM mobile communication network operators provide an e-mail service, by means of which mobile subscribers entered in the mobile communication network of the operator can have the use of an e-mail address of their own. This e-mail address is composed, for example, of the telephone number of the mobile subscriber supplemented with the symbol @, and the domain address, which specifies the mobile operator. An example of such an e-mail address is "040-123456@inet.tele.fi". The representation of the address can be advantageously selected by the mobile operator. One alternative address format that can be used is the format "firstname.lastname@inet.tele.fi", more familiar from the Internet network. An e-mail address composed on the basis of a telephone number provides the advantage that when a telephone number is known, it is easy to conclude the corresponding e-mail address. If a name-based addressing format is used, the sender has to know the e-mail address of the recipient, or the operator of the mobile communication network can provide a service in which the corresponding e-mail address can be determined on the basis of the telephone number. this can also be implemented for example by using a so-called directory service LDAP (Lightweight Directory Access Protocol), wherein telephone numbers and the corresponding e-mail addresses in the operating range of the mobile operator in question are stored for example in the e-mail server. It is also possible to link the directory services of different mobile operators, wherein address resolution requests can be transmitted between the e-mail servers of different mobile operators to the e-mail server of the mobile operator, in which the home network of the requested mobile subscriber is located. One possible globally applicable e-mail address format of the GPRS system could be the following: "telephone number@GPRS.operator. country".

GPRS is a new GSM service, by means of which GSM users can be provided with a packet radio function. The GPRS allocates radio resources only when there is something to be transmitted, wherein the same resources are divided among all mobile stations according to the

need. The conventional circuit switched network of the GSM system is designed for circuit switched speech transmissions, whereas the primary aim of the GPRS service is to implement thr coupling from a mobile station to a public data network by using known protocols, such as TCP/IP, X.25 and CLNP. However, there is a connection between the packet switched GPRS service and circuit switched services of the GSM system. On the physical channel, resources can be used again and certain signallings can be shared. On the same carrier, it is possible to allocate time slots for circuit switched operation and packet switched GPRS operation.

Fig. 1 presents telecommunication network connections in the packet switched GPRS service. The main element in the network infrastructure for GPRS services is a GPRS support node, so-called GSN. It is a mobility router which implements coupling and co-operation between different data networks, for example to the public switched packet data network PSPDN via a connection Gi, or to the GPRS network of another operator via a connection Gp. It also implements mobility management together with GPRS registers via a connection Gr and transmission of data packets to mobile stations MS irrespective of their location. Physically, the GPRS support node GSN can be integrated with a mobile switching center MSC, or it can be a separate network element based on the architecture of data network routers. The user data is passed directly via a connection Gb between the support node GSN and a base station system BSS formed of base stations BTS and base station controllers BSC, but in between the support node GSN and the mobile switching center MSC there is a signalling connection Gs. In Fig. 1, solid lines between blocks illustrate data communication and broken lines illustrate signalling. Physically, data can be passed transparently via the mobile switching center MSC. The radio interface between the base station BTS and the mobile station MS is marked with the reference Um. The references Abis and A illustrate respectively the interfaces between the base station BTS and the base station controller BSC and between the base station controller BSC and mobile switching center MSC, which is a signalling connection. The reference Gn illustrates the connection between different support nodes of the same operator. The support nodes are typically divided into

gateway GPRS support nodes GGSN (Gateway GSN) and serving i.e. home support nodes SGSN (Serving GSN) as presented in Fig. 1.

Fig. 2 presents a system composed of the Internet data network, a GPRS packet radio system PLMN (Public Land Mobile Network), a local area network LAN in a firm, and an e-mail server MSV of a mobile operator. At present, the GPRS packet radio system provides only a short message service SMS in message transmission. Since multimedia messages are, however, consirerably longer than the data that can be transmitted in short messages, this short message service cannot be applied to multimedia message communication in systems of prior art.

In the following, a situation will be described in which an e-mail message is transmitted from the outside of the GPRS network PLMN to the wireless terminal MS1 of the user. The sender of the e-mail message defines the address of the recipient, types the message s/he wishes, and possibly encloses attached files to be transmitted with the e-mail message. This can be conducted for example by means of an e-mail program or a WEB browser program in the terminal TE1. The message is transmitted to a server SV1 in the local area network LAN of the firm, which routes the message to the Internet network NW. In the Internet network NW, the e-mail message is routed on the basis of the destination address, via one or more routers, in the example of Fig. 2, to the e-mail server MSV of a mobile operator. The e-mail server MSV receives the e-mail message and stores it in its memory means (not shown). In the next phase, the e-mail server MSV examines whether the terminal MS1 of the recipient is logged in the GPRS network at that moment, and whether it has active packet data connections. This examination can be conducted for example in such a way that the e-mail server MSV transmits a query message to a name server DNS attached to the GPRS system. If the wireless terminal MS1 of the recipient is connected to the GPRS network PLMN, and has an active packet data connection, the name server DNS transmits to the e-mail server an acknowledgement message, with which it indicates the IP address of the wireless terminal MS1 of the user. If the wireless terminal MS1 of the user is not connected to the GPRS network at that moment, the e-mail server MSV transmits the query message again

later. If a static IP address is determined in the wireless terminal MS1 of the recipient, the e-mail server MSV can transmit IP query packets to this IP address, wherein the wireless terminal MS1 of the recipient transmits an acknowledgement message to the e-mail server MSV. If no acknowledgement message is received, e-mail messages cannot be transmitted to the wireless terminal MS1 of the recipient at that moment. Also in this alternative, query messages have to be transmitted repeatedly, if the wireless terminal MS1 of the recipient is not coupled. This above presented polling causes an unnecessary load on the data network and on the capacity of the GPRS network and delays in the e-mail message transmission, especially if the wireless terminal MS1 of the user is not connected to the GPRS network at the moment of query. In that case, the e-mail message can be transmitted to the destination only after the wireless terminal MS1 of the recipient has first logged in the GPRS network and activated a packet data connection, after which, at some stage, the e-mail server MSV transmits a query message. In systems of prior art, the e-mail server MSV has no possibility of defining the coupling of the recipient to the GPRS network except by polling.

One purpose of the present invention is to provide a method for transmitting multimedia messages to a wireless terminal as soon as possible after a packet data connection to the packet radio network is activated in the wireless terminal, a multimedia message communication system applying the method, and a multimedia terminal. The invention is based on the idea that the gateway support node of the packet radio network transmits to the multimedia message server information on the activation of the packet data connection in the wireless terminal. After this, multimedia messages are transmitted utilizing the features of the e-mail system. The method according to the present invention is characterized in what will presented in the characterizing part of the appended claim 1. The multimedia message communication system according to the invention is characterized in what will be presented in the characterizing part of the appended claim 8. The multimedia message server according to the invention is characterized in what will be presented in the characterizing part of the appended claim 12. The multimedia terminal according to the invention

is characterized in what will be presented in the characterizing part of the appended claim 13.

With the present invention, considerable advantages are achieved compared with solutions of prior art. In the multimedia message communication system implemented with the method according to the invention, it is possible to make the messages reach their destination faster, especially in situations when the destination terminal is not connected to a packet radio network or does not have active packet data connections at that moment when the message is transmitted. Thus, in the system according to the invention, unnecessary query messages need not be transmitted, which decreases the load on the multimedia message server and deallocates resources for other purposes. Thus, it is possible to give more connection time to other possible data transmission connections. The multimedia message communication system according to the invention is based on existing e-mail protocols, wherein it can be advantageously implemented in current e-mail systems.

In the following, the invention will be described with reference to the appended figures, in which:

Fig. 1 shows the structure of a telecommunication network in GSM GPRS packet radio service data transmission,

Fig. 2 shows an e-mail system in a reduced manner,

Fig. 3 shows a multimedia message communication system according to a preferred embodiment of the invention,

Fig. 4 shows an example of signalling when a wireless terminal is logging in to a network,

Fig. 5a shows an example of signalling when the wireless terminal activates a packet data connection to a network,

Fig. 5b shows a second example of signalling when the wireless terminal activates a packet data connection to a network, and

Fig. 5c shows an example of signalling when the wireless terminal deactivates a packet data connection.

To understand the invention, it will be described in the following with reference to a packet radio system of prior art in Fig. 1 and to a multimedia message communication system according to a first preferred embodiment of the invention in Fig. 3. The descriptions are also suitable for application examples when the application environment of the invention is advantageously similar.

Fig. 3 presents a multimedia message communication system according to a preferred embodiment of the invention, comprising a packet radio network HPLMN, which is for example the GPRS network of the GSM mobile communication system. This packet radio network HPLMN is coupled into a data transmission connection with the Internet data network NW via a gateway support node GGSN. In addition, the multimedia message communication system comprises a multimedia message server MMSV, which is, for example, an e-mail server of the system according to Fig. 1, supplemented with features according to the invention, which will be discussed below in this description. The multimedia message server MMSV is, for example, a server maintained by the operator of the packet radio network. The multimedia message server is arranged in a data transmission connection to the Internet data network NW and the gateway support node GGSN of the packet radio network. In addition, Fig. 3 shows a local area network of a firm, which is also connected to the Internet data network NW via a server SV1.

A wireless terminal MS1 comprises, for instance, mobile station and data processing features. This kind of wireless terminal MS1 can consist of, for example, a mobile station which is connected to a portable computer. Another alternative is to connect a GSM mobile station manufactured in PCMCIA card format to a portable computer. The manner in which the wireless terminal MS1 according to the

invention is implemented, is not significant with respect to applying the invention. The wireless terminal MS1 contains an application program for transmission and automatic reception of e-mails, such as an application program according to an SMTP protocol (Simple Mail Transfer Protocol). In addition, the wireless terminal advantageously contains an application program, such as an application program according to IMAP protocol, intended for retrieving e-mails from an e-mail server MMSV.

Fig. 4 presents in an arrow diagram an example of the different stages when the wireless terminal MS1 is logged in to the network as the wireless terminal MS1 is switched on. At first, the wireless terminal MS1 and the GPRS network are synchronized, which is conducted in a way corresponding to conventional circuit switching in the GSM mobile communication network. When the wireless terminal MS1 is to be registered for a packet radio function, such as the use of GPRS service, it starts a specified logon process, a so-called GPRS logon process. First, the wireless terminal MS1 transmits a channel allocation request for radio traffic to the base station system (stage 401). The base station system BSS acknowledges the request (stage 402), after which the wireless terminal MS1 transmits a request for packet service to the base station system BSS (stage 403). After that, in the mobile switching center MSC, the wireless terminal (MS1) is authenticated and the encryption key is exchanged (stage 404) between the wireless station MS1 and the network, as is known for example from the GSM system. Next, the wireless terminal MS1 transmits a logon request for packet services to the serving packet service support node SGSN (stage 405). The request contains, for instance, the identification of the wireless terminal MS1 and parameter data for encryption. The serving packet service support node SGSN conducts an address request process to the gateway support node GGSN (stage 406). The serving packet service support node SGSN transmits a logon request for packet services to the gateway support node GGSN (stage 407), which registers the location of the wireless terminal MS1 by updating the routing table (stage 408) and replies to the logon request (stage 409). Thus, the serving packet service support node SGSN confirms to the wireless terminal MS1 the logon to the packet services (stage 410), wherein it gives the wireless terminal MS1 a temporary logical link

identity TLLI to be used as an address in data transmissions between the wireless terminal MS1 and the serving support node SGSN. This TLLI identification is used in the air interface Um of the packet radio to identify the wireless terminal MS1. The logon confirmation message from the serving support node SGSN to the wireless terminal MS1 typically also contains a wireless terminal MS1 identification and a cell identification (in the range of which the wireless terminal MS1 is located). Referring to stage 410, it is known from circuit switched technics that the wireless terminal MS1 is allocated a specified channel, in other words a specified time slot of the TDMA frame to be used for transmission and reception, i.e. the channels of the up-link and the down-link are provided in pairs. In the GSM GPRS packet service, the support node SGSN provides the wireless terminal MS1 with information on one or more channels of the down link, to be used in the communication of the down link. The wireless terminal MS1 indicates that it is ready for the packet service connection (stage 411), after which the encryption parameters are exchanged for the packet services between the wireless terminal MS1 and the serving support node SGSN (stage 412). After this, the wireless terminal MS1 moves into a wait state, wherein the channel is deallocated (stage 413).

The wireless terminal MS1 is allowed to use the channel again as soon as it has anything to transmit, wherein it transmits to the network (base station) a so-called packet random access burst PRA as a channel allocation request, which can also be called a channel allocation burst. The wireless terminal MS1 can transmit the channel allocation burst PRA on a logical allocation channel (so-called PRA channel) in the time slot reserved for it. The network acknowledges the request by transmitting a packet access grant PAG to the wireless terminal MS1.

The above described stages presented in Fig. 4 are defined in the GSM GPRS packet service specifications GSM 03.60 and are known as such by anyone skilled in the art. In a system similar to that of Fig. 4, the up-link transmissions, i.e. from the wireless terminal MS1 towards the base station BTS, and the down-link transmissions, i.e. from the base station BTS towards the wireless terminal MS1, are independent of each other.

At this stage, the wireless terminal MS1 can transmit and receive short messages, but packet format data transmission is not yet available. This is achieved with so-called activation signalling of the packet data connection, which is presented in the reduced arrow diagram in the appended Fig. 5a. The wireless terminal MS1 starts to activate the packet data connection by transmitting an activation request for the PDP connection to the serving support node SGSN (stage 501). The request message also contains parameters for identifying the transmitting terminal and defining the desired connection type. Next, the serving support node SGSN authenticates the wireless terminal MS1 and exchanges the encryption key (stage 502). After this, the serving support node SGSN checks that the wireless terminal MS1 is entitiled to establishing a packet data connection according to the parameters it has transmitted, wherein the serving support node SGSN establishes a connection identification TID for the connection and transmits a packet data connection set-up request to the gateway support node GGSN (stage 503). The gateway support node GGSN either selects the dynamic address (PDP address) to be used in the packet data connection or, if a static address is allocated for the wireless terminal MS1, the gateway support node GGSN uses this address. In addition, the gateway support node supplements its packet data connection table with the data on this new connection, on the basis of which the gateway support node GGSN routes the incoming and outgoing packets of the packet data connection. The gateway support node GGSN transmits a reply message to the serving support node SGSN (stage 504), which contains information on whether the connection has been activated or not. The serving support node SGSN transmits to the wireless terminal MS1 an acknowledgement message on the activation of the packet data connection (stage 505). In the acknowledgement message, information on the activated packet data connection is transmitted in parameters to the wireless station MS1. The above described stages are known as such from the GPRS packet radio network. Furthermore, in the method according to a preferred embodiment of the present invention, message communication of the activation of the packet data connection is performed preferably in such a way that the gateway support node GGSN further transmits an identification of the wireless terminal MS1, such as the international mobile subscriber identity IMSI, and the IP address of the wireless

terminal to the multimedia message server MMSV (stage 506). The e-mail addresses of the terminals determined in the multimedia message server are typically defined at the stage when the user makes a contract on the use of e-mail with the network operator. This e-mail address, as well as the identification of the wireless terminal, such as a telephone number MSISDN and/or a device identification IMSI, are stored in the multimedia message server MMSV. After receiving, in the activation message, information on the IP address allocated for the packet data connection of the wireless terminal MS1 in question, the multimedia message server MMSV is now capable of linking the e-mail address, the IP address to be used in the packet data connection, and the corresponding identification of the wireless terminal MS1 in the packet radio network HPLMN. Thus, the multimedia message server MMSV can define the wireless terminal MS1 of the right recipient on the basis of the e-mail address contained in the e-mail messages transmitted in the Internet data network. The multimedia message server MMSV is advantageously provided with a so-called mailbox for each such e-mail address which has the packet radio network HPLMN connected to this multimedia message server MMSV as its home network. It is obvious that this multimedia message server MMSV can contain mailboxes also for e-mail addresses outside the packet radio network. This database contains advantageously information stored, for each e-mail address, on whether there are active packet data connections in the e-mail address in question. In this situation, on the basis of the message received, the multimedia message server MMSV sets state information for said wireless terminal MS1 to indicate that it has an active packet data connection.

In the above presented signalling, it is also possible to use the phone number MSISDN of the wireless terminal instead of the international mobile subscriber identity IMSI to specify the wireless terminal MS1. This alternative is shown in the arrow diagram of the appended Fig. 5b, in which the different stages 507—512 largely correspond to stages 501—506 in Fig. 5a. The most substantial differences are to be found at stage 509, which corresponds to stage 503 in Fig. 5a. However, in the GPRS system, the gateway support node GGSN does not normally have access to the phone number MSISDN of the wireless terminal, and therefore the serving support node SGSN has to transmit the

phone number MSISDN of the terminal to the gateway support node GGSN. This can be performed for example by means of a field attached to the activation message of the packet data connection, or using a private extension field contained in the activation message. A further possibility is that the gateway support node GGSN defines the phone number MSISDN of the wireless terminal from a home location register (HLR). This, however, requires more processing capacity in the gateway support node GGSN and loads it more.

In the following, a situation will be described, in which a multimedia message is transmitted from outside of the packet radio network HPLMN to a recipient who has an e-mail address in the packet radio network HPLMN. The sender of the message uses a terminal TE1 to define the e-mail address of the recipient, types the message s/he wishes, and encloses multimedia information to be transmitted, such as a video recording or a still image file. The message is advantageously converted to a form corresponding to a protocol known as such, and transmitted in a local area network LAN of a firm to a server SV1, which routes the message to the Internet network NW. The data transmission protocol intended for the transmission of e-mail messages is the SMTP protocol. In the Internet network NW, the multimedia message is transmitted on the basis of the IP address of the recipient via one or more routers, in the example of Fig. 3, to the multimedia message server MMSV of a mobile operator. The multimedia message server MMSV receives the multimedia message and stores it in a mailbox established in its memory means (not shown). In the next phase, the multimedia message server MMSV examines on the basis of the IP address, whether the wireless terminal MS1 of the recipient is logged in to the GPRS network, and whether it has active packet data connections. This can be implemented advantageously by examining from the database established in the multimedia message server MMSV the state information of the IP address contained in the multimedia message. Thus, it is not necessary for the multimedia message server to perform polling. If the wireless terminal MS1 of the recipient is connected to the GPRS network and has an active packet data connection, the multimedia message server transmits a message via the gateway support node GGSN to the packet radio network HPLMN, in which the message is routed via the serving support node

SGSN to the base station system BSS, to which the wireless terminal MS1 is coupled at that moment. If the wireless terminal MS1 is not coupled to the packet radio network HPLMN or it does not have active packet data connections, the multimedia message server does not transmit the message or pollings, but the message is stored in the memory means of the multimedia message server. The multimedia message server MMSV waits for information on the activation of the packet data connection, transmitted from the gateway support node GGSN, before the multimedia message server MMSV transmits the multimedia message to the packet radio network via the gateway support node GGSN.

Before transmitting the message to the packet radio network, the message is framed into packets according to the packet radio network by attaching, for instance, the address information of the packet radio network. In the packets of the packet radio network, the payload is the original IP packet and the IP addresses (destination/source) contained therein. In the wireless terminal MS1 receiving the message, the message is unpacked and restored into IP packets, i.e. the actual content of the message, in this example the IP packet, is separated from the packets of the packet network. For this type of framing, the term "tunneling" is also used. After unpacking the message, the type of the message is examined, and the content of the message is transmitted on the basis of the type to such an application program which is capable of processing the message. This application program is, for example, a browsing program for still images, wherein when the message contains still images, the content of the images can be represented with the display device of the wireless terminal MS1.

All the multimedia messages and other e-mail messages addressed to an e-mail address in the packet radio network are directed to the multimedia message server before the messages are transmitted to the packet radio network. The messages are transmitted for example via the Internet data network or from a packet radio network. The users of the multimedia message communication system can specify criteria in their mailbox, on the basis of which the multimedia message server determines which procedures are induced by each multimedia message incoming in the multimedia message server MMSV. The user can utilize

for example a WEB browser program or a WAP browser program to determine that only certain types of multimedia messages are transmitted from the multimedia server MMSV automatically to the wireless terminal MS1 of the user when it has an active packet data connection. It is possible to define the type of the message from MIME type messages, on the basis of the type information contained in them. The user can also restrict automatic transmission on the basis of the sender, time, size, etc. If necessary, the user can prevent automatic transmission of all messages. Of messages, whose automatic transmission the user has prevented, the user can study e.g. header information, and retrieve the desired messages to the wireless terminal for instance by means of a program applying IMAP protocol. It can also be determined that the multimedia message server MMSV transmits to the wireless terminal MS1, for example in a short message, information on such messages, which have been received in the e-mail box of the user and for which automatic transmission is inhibited.

In a situation where the multimedia message server MMSV is aware that the wireless terminal MS1 of the user is logged in to the packet network HPLMN and that it has one or more active packet data connections, the multimedia message server examines the received messages to find out whether automatic transmission is allowed and transmits to the packet radio network, advantageously by means of the SMTP protocol, such messages for which the user has not prevented automatic transmission. These messages are transferred in the multimedia message server to an SMTP message sequence, and the multimedia message server MMSV advantageously establishes a connection according to the TCP protocol to the wireless terminal MS1 of the recipient of the messages. The wireless terminal MS1 only accepts a connection established by the multimedia message server MMSV in question. In this way it is possible to prevent interference caused by terminals of unauthorized users.

In the foregoing, the activation of a packet data connection and its use in multimedia message communication has been described. Furthermore, a situation will be described, in which a user of the wireless terminal MS1 wishes to terminate, i.e deactivate a packet data connection. This is also shown in the arrow diagram of Fig. 5c in a

reduced manner. A deactivation request (Deactivate PDP Context Request) is transmitted from the wireless terminal to the serving support node SGSN (stage 513). This deactivation request transmits, for instance, information on the temporary identification TLLI allocated for the wireless terminal MS1. At the next stage, the serving support node SGSN conducts, if necessary, authentication of the wireless terminal MS1 and exchange of the encryption key (stage 514). After this, the serving support node SGSN transmits a packet data connection delete message (Delete PDP Context Request) to the gateway support node GGSN, which deletes the data of the packet data connection to be deactivated. If the wireless terminal had the use of the dynamic address provided by the packet radio network in the deactivated packet data connection, this address is reallocated to the use of other packet data connections which are to be activated. The gateway support node GGSN transmits an acknowledgement message on the deactivation of the packet data connection (Delete PDP Context Response) to the serving support node SGSN (stage 515), which further informs the wireless terminal MS1 of the deactivation of the connection with a deactivation acknowledgement message (Deactivate PDP Context Response), as illustrated by stage 516 in Fig. 5c. The gateway support node GGSN also transmits information on the deactivation of the packet data connection to the multimedia message server MMSV (stage 517), which modifies in its own database the state information on the wireless terminal MS1 in question. If multimedia messages for this wireless terminal MS1 are received after that, the multimedia message server MMSV does not forward them to the wireless terminal MS1 until the next time that the gateway support node GGSN has informed the multimedia message server MMSV of the activation of the packet connection, as described above in this description.

Furthermore, the system according to Fig. 3 presents a so-called firewall, for the purpose of preventing unauthorized users from entering the packet radio network HPLMN, and on the other hand of restricting the entry of messages coming from outside of the packet radio network HPLMN in the packet radio network HPLMN. This firewall solution is known as such and need therefore not be discussed in more detail in this context.

It is also possible to apply the invention in wireless terminals with more restricted features, for example in connection with a conventional wireless telephone. For this, the system according to Fig.3 presents a WAP proxy, for the purpose of e.g. generating a message communication mechanism for relatively short messages, by means of a so-called WAP protocol (Wireless Application Protocol). Furthermore, the system of Fig. 3 presents as an example a so-called Mowgli proxy, by means of which it is possible to enhance wireless communication. This WAP proxy and Mowgli proxy can be used to conduct protocol transforms. For example messages coming from the Internet network NW are first directed to the multimedia message server MMSV and after this, if desired, to the proxy, in which a protocol transform is conducted. Thus, the multimedia message server advantageously requires support only for the SMTP, IMAP, and HTTP (Hyper Text Transfer Protocol) data transmission protocols.

The invention is not restricted solely to the embodiments presented above, but it can be modified within the scope of the appended claims.

Claims:

1. A method for transmitting multimedia messages to a wireless terminal (MS1) in a data transmission system which comprises at least one mobile communication network (HPLMN) and at least one multimedia message server (MMSV), in which method for each wireless terminal (MS1) coupled to the mobile communication network (HPLMN), an address identifying said wireless terminal (MS1) is specified, and for said wireless terminal (MS1), at least one data transmission connection is activated, **characterized** in that information on the activation of the data transmission connection for said wireless terminal (MS1) is transmitted to the multimedia message server (MMSV).

2. The method according to claim 1, in which messages addressed to said wireless terminal (MS1) are transmitted to the multimedia message server (MMSV), **characterized** in that before the multimedia messages received by the multimedia message server (MMSV) and addressed to the wireless terminal (MS1) are transmitted to the wireless terminal (MS1),

- it is examined, whether there is an activated data transmission connection for said wireless terminal (MS1),
- if a data transmission connection is activated for said terminal (MS1), the multimedia messages are transmitted to the wireless terminal (MS1) by using said activated data transmission connection,
- if there is no activated data transmission connection for said wireless terminal (MS1), the next phase is to wait until a data transmission connection is activated for said wireless terminal (MS1), to use it to transmit multimedia messages to said wireless terminal (MS1).

3. The method according to claim 1 or 2, **characterized** in that at the transmission stage, packets are formed of the multimedia messages, to be transmitted to the wireless terminal (MS1).

4. The method according to claim 1, 2, or 3, **characterized** in that in the data transmission system, a data transfer protocol in a packet form,

intended for e-mail transmission, such as SMTP, is used, wherein multimedia messages are formed into packets according to said data transfer protocol.

5. The method according to claim 4, **characterized** in that data of the type of the multimedia message is transmitted in the multimedia messages, wherein in the method it is possible to select which types of multimedia messages are transmitted in the activated data transmission connection.

6. The method according to claim 4 or 5, **characterized** in that multimedia messages are formed into packets according to an Internet protocol, which are framed at the transmission stage into packets according to a data transfer protocol intended for transmitting e-mail messages, and which packets are formed into packets according to the Internet protocol in said terminal (MS1).

7. The method according to any of the claims 1 to 6, **characterized** in that information on deactivation of the data transmission connection activated for said wireless terminal (MS1) is transmitted to the multimedia message server (MMSV).

8. A system for transmitting multimedia messages to a wireless terminal (MS1), the system comprising at least one mobile communication network (HPLMN), at least one multimedia message server (MMSV), means (SGSN, GGSN) for specifying an identifying address for each wireless terminal (MS1) connected to the mobile communication network (HPLMN), means (BSS, SGSN, GGSN) for activating at least one data transmission connection for said wireless terminal (MS1), **characterized** in that the data transmission system also comprises means (GGSN) for transmitting to the multimedia message server (MMSV) information on activation of a data transmission connection for said wireless terminal (MS1).

9. The system according to claim 8, **characterized** in that it also comprises means (TE1) for forming packets of the multimedia messages to be transmitted to the wireless terminal (MS1), means (NW) for transmitting packets addressed to said wireless terminal to the

multimedia message server (MMSV), and means (HPLMN) for forwarding packets further by using said data transmission connection activated for the wireless terminal (MS1).

10. The system according to claim 9, **characterized** in that it comprises means (TE1, NW, MMSV) for using a data transfer protocol, in a packet format, such as SMTP, intended for transmitting e-mails, wherein the multimedia messages are arranged to be formed into packets according to said data transfer protocol.

11. A system according to claim 9 or 10, **characterized** in that the system comprises at least one packet radio network (HPLMN), such as GPRS network.

12. A multimedia message server (MMSV), which is arranged to be connected to a multimedia message communication system, which comprises at least one wireless terminal (MS1), at least one mobile communication network (HPLMN), means (SGSN, GGSN) for specifying an identifying address for each wireless terminal (MS1) connected to the mobile communication network (HPLMN), means (BSS, SGSN, GGSN) for activating at least one data transmission connection for said wireless terminal (MS1), **characterized** in that the multimedia message server (MMSV) comprises:

- means for receiving activation data on the data transmission connection,
- means for examining the activation data, and
- means (HPLMN) for transmitting packets further by using said data transmission connection activated for the wireless terminal (MS1).

13. A multimedia terminal (MS1) which is intended to be used in the system according to any of the claims 8 to 11, **characterized** in that the multimedia terminal (MS1) comprises means for transmitting a data transmission connection activation request to the mobile communication network (HPLMN).

Abstract:

The invention relates to a method for transmitting multimedia messages to a wireless terminal (MS1) in a data transmission system which comprises at least one mobile communication network (HPLMN) and at least one multimedia message server (MMSV). In the method, each wireless terminal (MS1) connected to the mobile communication network (HPLMN), is allocated an address specifying said wireless terminal (MS1), and at least one data transmission connection is activated for said wireless terminal (MS1). Information on the activation of the data transmission connection for said terminal (MS1) is transmitted to the multimedia message server (MMSV).

Fig. 3

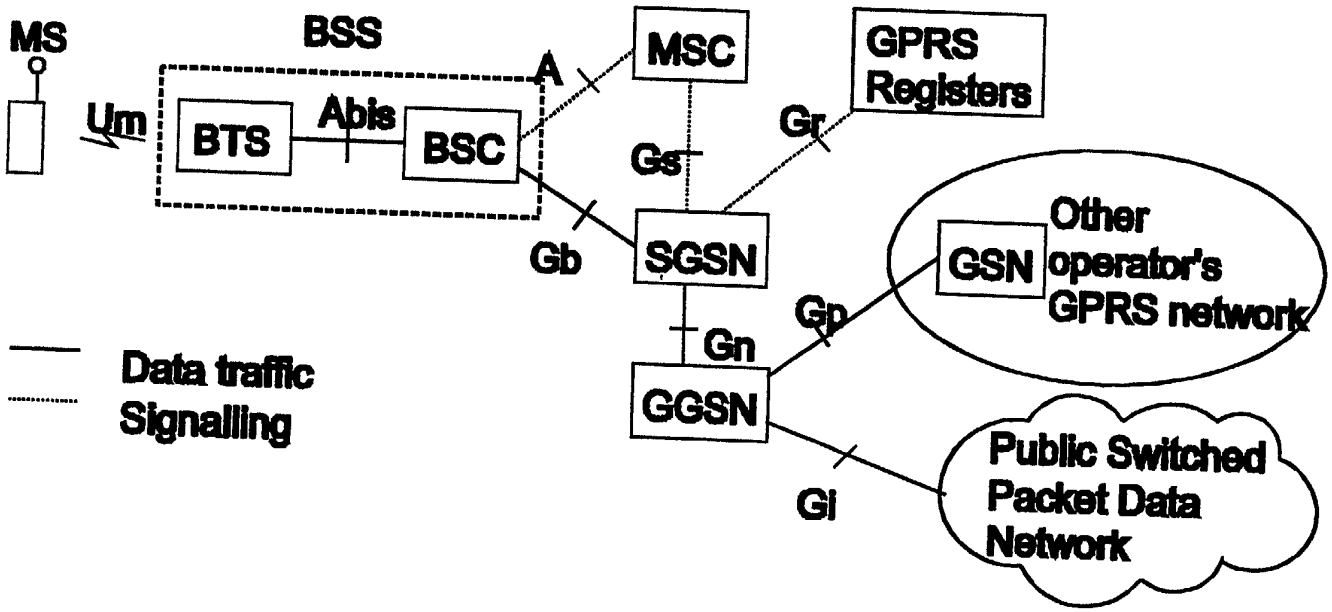
MS
BSS
Um
BTS
Abis
BSC
A
MSC
GPRS Registers
Gr
Gs
Gb
SGSN
GSN
Other operator's GPRS network
Gp
Gn
GGSN
Gi
Public Switched Packet Data Network
Data traffic
Signalling

Fig 1

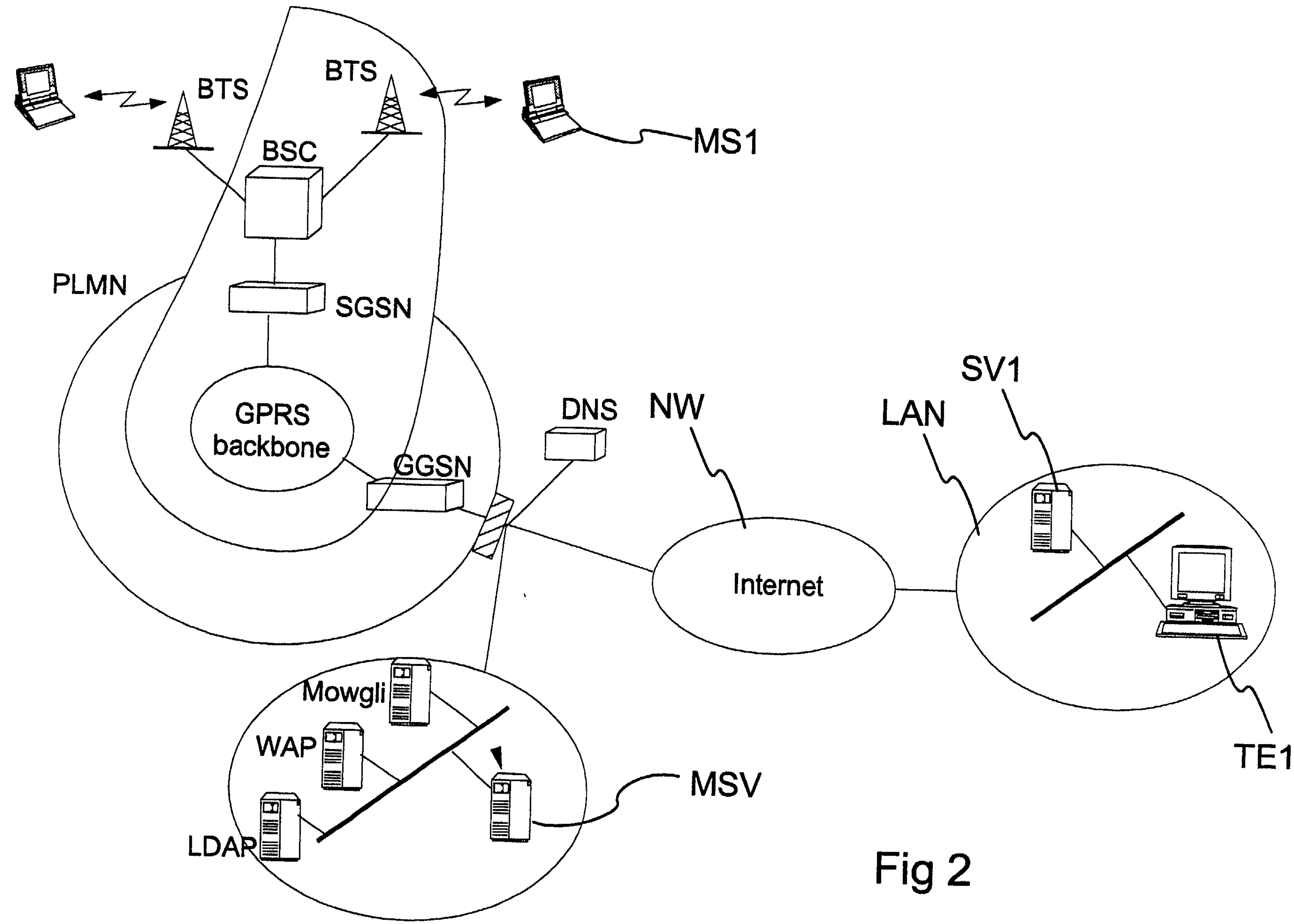
BTS
BTS
BSC
MS1
PLMN
SGSN
GPRS
backbone
GGSN
DNS
NW
Internet
SV1
LAN
TE1
Mowgli
WAP
LDAP
MSV

Fig 2

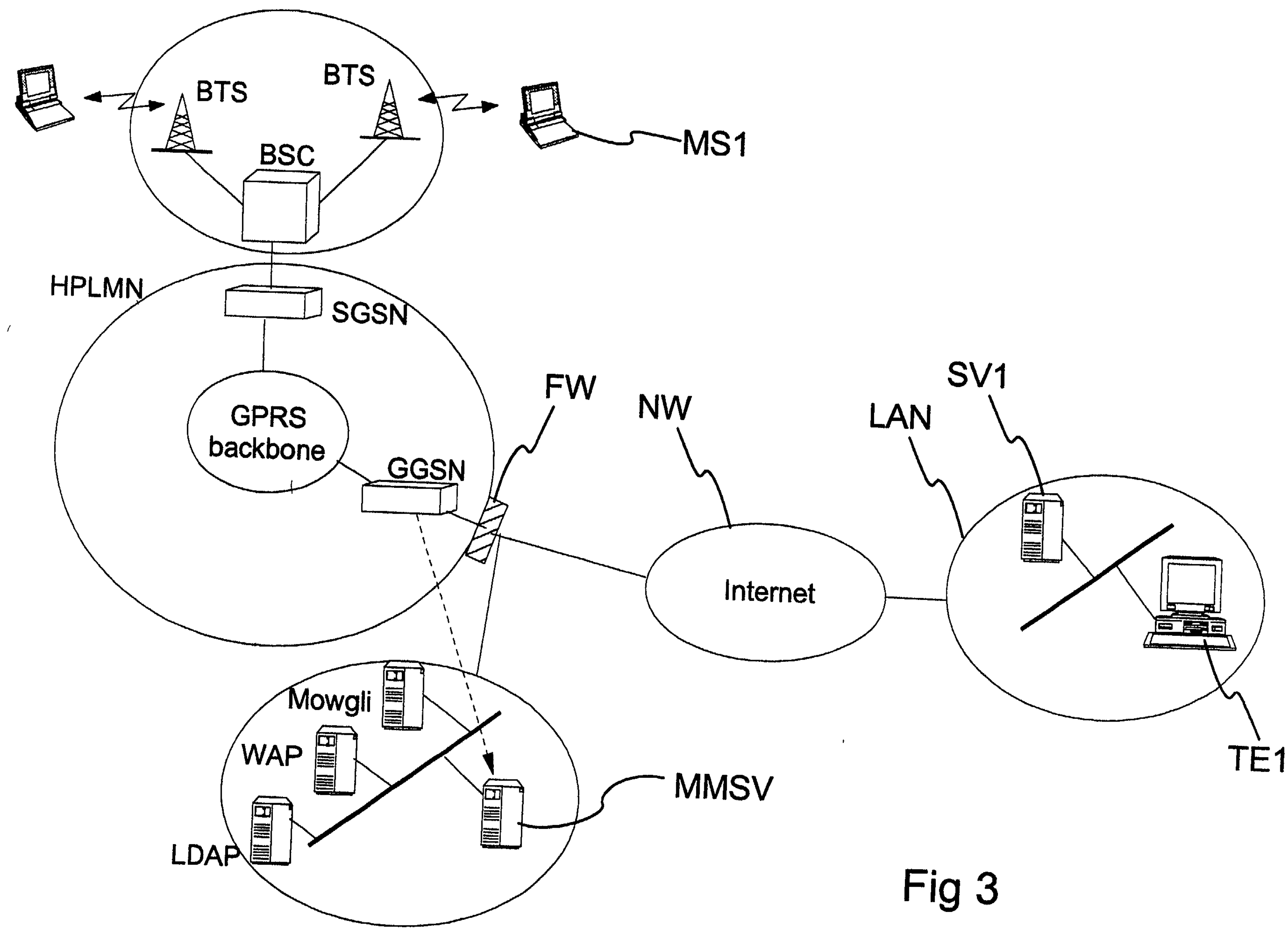
BTS
BTS
BSC
MS1
HPLMN
SGSN
GPRS
backbone
GGSN
FW
NW
Internet
LAN
SV1
TE1
Mowgli
WAP
LDAP
MMSV

Fig 3

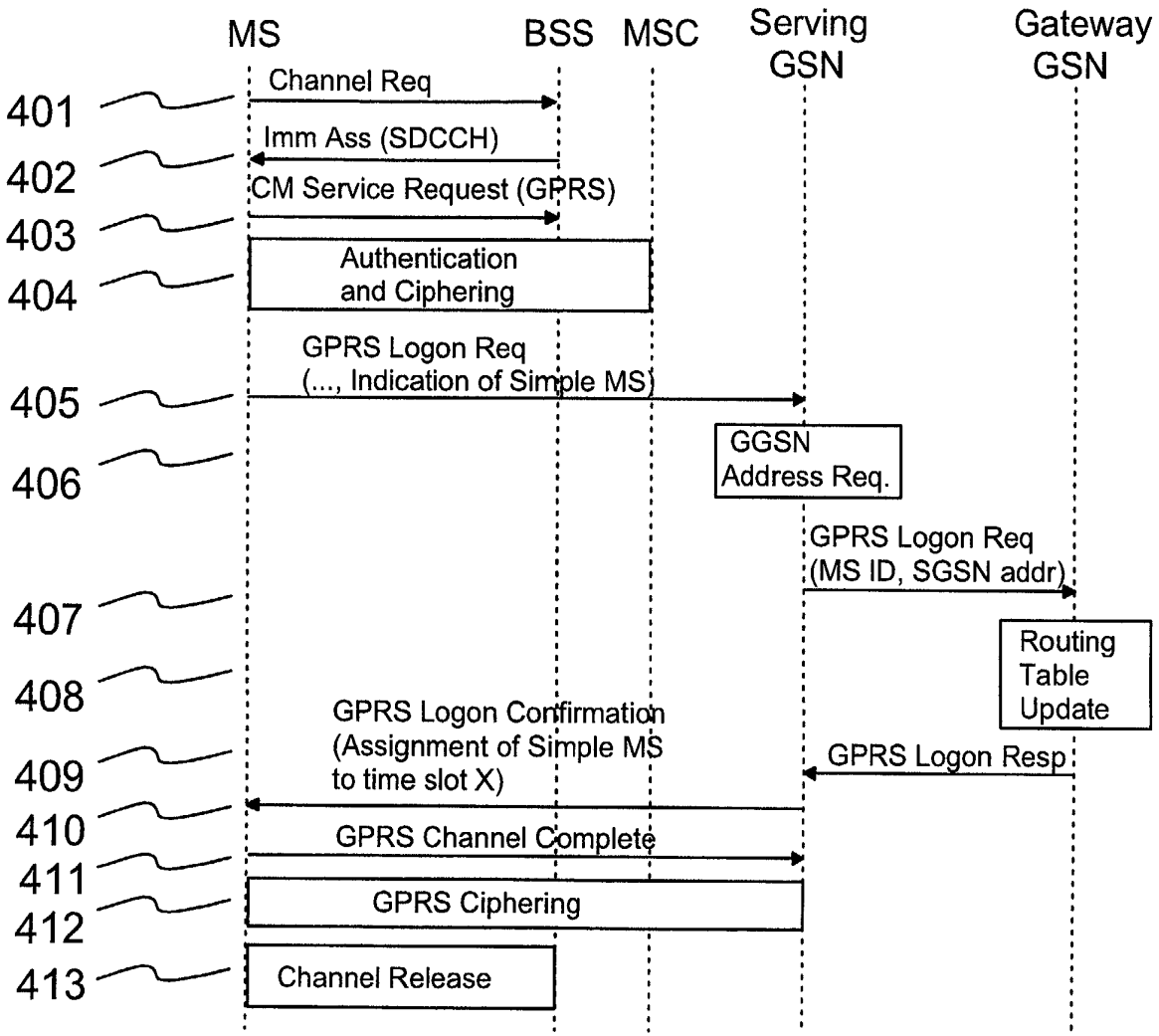
MS
BSS
MSC
Serving GSN
Gateway GSN
401
Channel Req
402
Imm Ass (SDCCH)
403
CM Service Request (GPRS)
404
Authentication and Ciphering
405
GPRS Logon Req (..., Indication of Simple MS)
406
GGSN Address Req.
GPRS Logon Req (MS ID, SGSN addr)
407
Routing Table Update
408
GPRS Logon Confirmation (Assignment of Simple MS to time slot X)
409
GPRS Logon Resp
410
GPRS Channel Complete
411
412
GPRS Ciphering
413
Channel Release

Fig 4

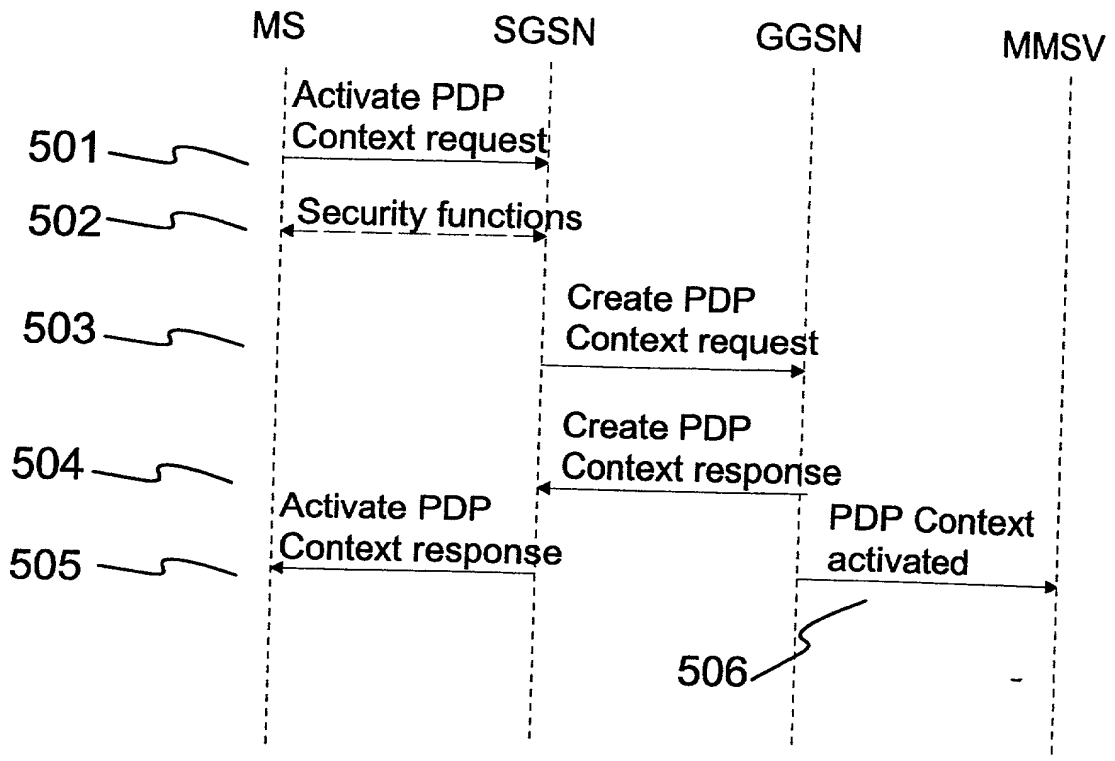
MS
SGSN
GGSN
MMSV
Activate PDP Context request
501
Security functions
502
Create PDP Context request
503
Create PDP Context response
504
Activate PDP Context response
505
PDP Context activated
506

Fig 5a

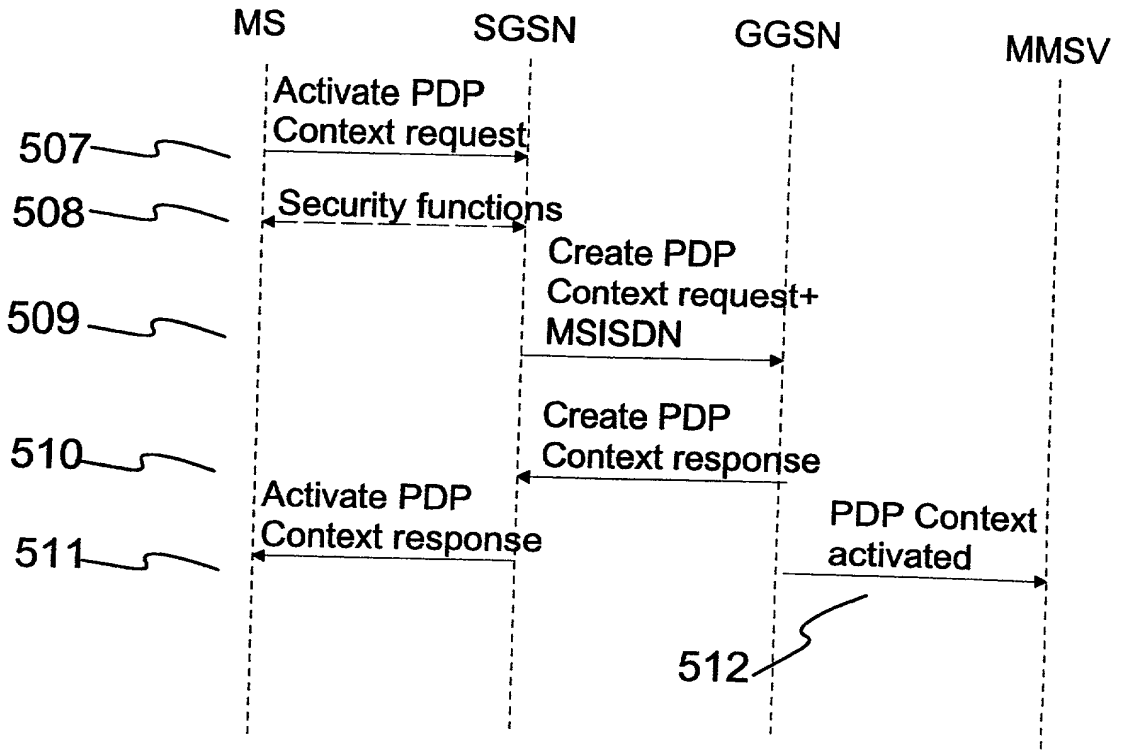
MS
SGSN
GGSN
MMSV
Activate PDP Context request
507
Security functions
508
Create PDP Context request+ MSISDN
509
Create PDP Context response
510
Activate PDP Context response
511
PDP Context activated
512

Fig 5b

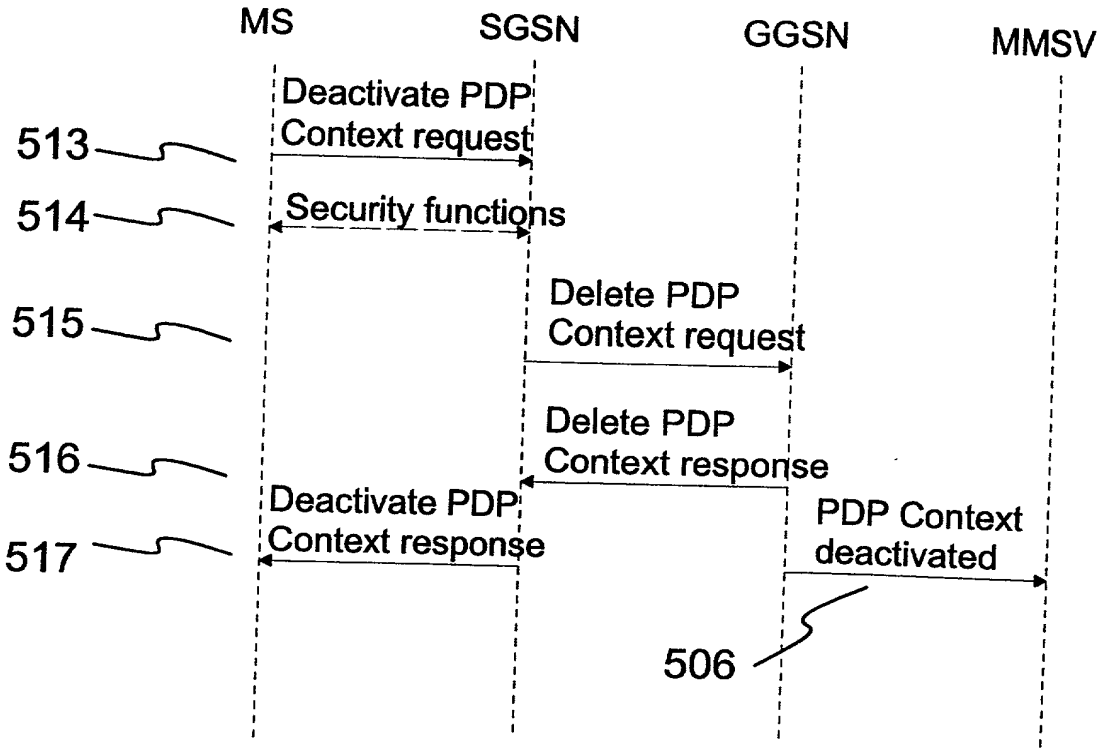
MS
SGSN
GGSN
MMSV
Deactivate PDP Context request
513
Security functions
514
Delete PDP Context request
515
Delete PDP Context response
516
Deactivate PDP Context response
517
PDP Context deactivated
506

Fig 5c

Attorney's Docket No. _____ *PATENT*

COMBINED DECLARATION AND POWER OF ATTORNEY

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL, CONTINUATION OR C-I-P)

As a below named inventor, I hereby declare that:

TYPE OF DECLARATION

This declaration is of the following type:

(check one applicable item below)

[x] original.

[ ] design.

[ ] supplemental.

NOTE: *If the declaration is for an International Application being filed as a divisional, continuation or continuation-in-part application, do not check next item; check appropriate one of last three items.*

[ ] national stage of PCT.

NOTE: *If one of the following 3 items apply, then complete and also attach ADDED PAGES FOR DIVISIONAL, CONTINUATION OR C-I-P.*

[ ] divisional.

[ ] continuation.

[ ] continuation-in-part (C-I-P).

INVENTORSHIP IDENTIFICATION

WARNING: *If the inventors are each not the inventors of all the claims, an explanation of the facts, including the ownership of all the claims at the time the last claimed invention was made, should be submitted.*

My residence, post office address and citizenship are as stated below, next to my name. I believe that I am the original, first and sole inventor *(if only one name is listed below)* or an original, first and joint inventor *(if plural names are listed below)* of the subject matter that is claimed, and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

A method for transmitting multimedia messages and a multimedia message communication system

SPECIFICATION IDENTIFICATION

the specification of which:

(complete (a), (b), or (c))

(a) [x] is attached hereto

(b) [ ] was filed on _____ as [ ] Serial No. 0/ _____
or [ ] Express Mail No., As Serial No. not yet known _____
and was amended on _____ *(if applicable).*

NOTE: Amendments filed after the original papers are deposited with the PTO that contain new matter are not accorded a filing date by being referred to in the declaration. Accordingly, the amendments involved are those filed with the application papers or, in the case of a supplemental declaration, are those amendments claiming matter not encompassed in the original statement of invention or claims. See 37 CFR 1.67.

(c) [ ] was described and claimed in PCT International Application No. _____, filed on _____ and as amended under PCT Article 19 on _____ *(if any).*

ACKNOWLEDGEMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56,

(also check the following items, if desired)

[x] and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and

[ ] in compliance with this duty, there is attached an information disclosure statement, in accordance with 37 CFR 1.98.

PRIORITY CLAIM (35 U.S.C § 119(a)–(d))

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)–(d) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

(complete (d) or (e)

(d) [ ] no such applications have been filed.

(e) [x] such applications have been filed as follows.

NOTE: where item (c) is entered above and the International Application which designated the U.S. itself claimed priority check item (e), enter the details below and make the priority claim.

PRIOR FOREIGN/PCT APPLICATION(S) FILED WITHIN 12 MONTHS (6 MONTHS FOR DESIGN) PRIOR TO THIS APPLICATION AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. § 119(a)–(d)

COUNTRY (OR INDICATE IF PCT)	APPLICATION NUMBER	DATE OF FILING (day, **month**, year)	PRIORITY CLAIMED UNDER 37 USC 119
Finland	981184	27 May 1998	[x] YES NO [ ]
			[ ] YES NO [ ]
			[ ] YES NO [ ]
			[ ] YES NO [ ]
			[ ] YES NO [ ]

CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATION(S)
(34 U.S.C. § 119(e))

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

PROVISIONAL APPLICATION NUMBER	FILING DATE
/	
/	
/	
/	

CLAIM FOR BENEFIT OF EARLIER US/PCT APPLICATION(S) UNDER 35 U.S.C. 120

[ ] The claim for the benefit of any such applications are set forth in the attached ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART (C-I-P) APPLICATION

ALL FOREIGN APPLICATION(S), *IF ANY*, FILED MORE THAN 12 MONTHS (6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

_____

_____

_____

NOTE: If the application filed more than 12 months from the filing date of this application is a PCT filing forming the basis for this application entering the United States as (1) the national stage, or (2) a continuation, divisional, or continuation-in-part, then also complete ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR C-I-P APPLICATION for benefit of the prior U.S. or PCT application(s) under 35 U.S.C. § 120.

POWER OF ATTORNEY

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

(list name and registration number)

Clarence A. Green	(24,622)
Harry F. Smith	(32,493)
Mark F. Harrington	(31,686)

(check the following item, if applicable)

☐ Attached, as part of this declaration and power of attorney, is the authorization of the above-named attorney(s) to accept and follow instructions from my representative(s).

SEND CORRESPONDENCE TO

Clarence A. Green
Perman & Green, LLP
425 Post Road
Fairfield, CT 06430

DIRECT TELEPHONE CALLS TO:
(Name and telephone number)
Clarence A. Green
(203) 250–1800

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)

NOTE: *Carefully indicate the family (or last) name, as it should appear on the filing receipt and all other documents.*

Full name of sole or first inventor

Matti _____ Turunen

(GIVEN NAME) (MIDDLE INITIAL OR NAME) FAMILY (OR LAST NAME)

Inventor's signature Matti Turunen

Date 16 April 1999 Country of Citizenship Finland

Residence Kirkkoladonkatu 28 B 7, FIN-33560 Tampere, Finland

Post Office Address Kirkkoladonkatu 28 B 7, FIN-33560 Tampere, Finland

---

Full name of second joint inventor, if any

(GIVEN NAME) (MIDDLE INITIAL OR NAME) FAMILY (OR LAST NAME)

Inventor's signature

Date Country of Citizenship

Residence

Post Office Address

Full name of third joint inventor, if any

(GIVEN NAME) MIDDLE INITIAL OR NAME FAMILY (OR LAST NAME)

Inventor's signature

Date Country of Citizenship

Residence

Post Office Address

(check proper box(es) for any of the following added page(s) that form a part of this declaration)

☐ **Signature** for fourth and subsequent joint inventors. *Number of pages added* _____

* * *

☐ **Signature** by administrator(trix), executor(trix) or legal representative for deceased or incapacitated inventor. *Number of pages added* _____

* * *

☐ **Signature** for inventor who refuses to sign or cannot be reached by person authorized under 37 CFR 1.47. *Number of pages added* _____

* * *

☐ Added page for **signature** by one joint inventor on behalf of deceased inventor(s) where legal representative cannot be appointed in time. (37 CFR 1.47)

* * *

☐ Added pages to combined declaration and power of attorney for divisional, continuation, or continuation-in-part (C-I-P) application.

☐ Number of pages added _____

* * *

☐ Authorization of attorney(s) to accept and follow instructions from representative.

* * *

(if no further pages form a part of this Declaration, then end this Declaration with this page and check the following item)

☒ This declaration ends with this page.